

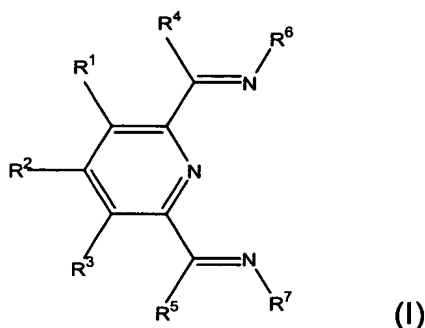
## CLAIMS

What is claimed is:

1. A process for the preparation of  $\alpha$ -olefins by the catalyzed oligomerization of ethylene using as part of a catalyst system a complex of a late transition metal with a tridentate ligand wherein a process stream comprising said  $\alpha$ -olefins and said catalyst system is produced, wherein the improvement comprises, deactivating said catalyst system by adding to said process stream one or more organic compounds having a pKa of about 2 to about 20.

2. The process as recited in claim 1 wherein said late transition metal is iron and said ligand is a 2,6-pyridinedicarboxaldehydebisimine or a 2,6-diacetylpyridinebisimine.

3. The process as recited in claim 2 wherein said ligand has the formula



wherein:

$R^1$ ,  $R^2$  and  $R^3$  are each independently hydrogen, hydrocarbyl, substituted hydrocarbyl or an inert functional group, provided that any two of  $R^1$ ,  $R^2$  and  $R^3$  vicinal to one another taken together may form a ring;

$R^4$  and  $R^5$  are each independently hydrogen, hydrocarbyl, substituted hydrocarbyl or an inert functional group;

$R^6$  and  $R^7$  are each independently a substituted aryl having a first ring atom bound to the imino nitrogen, provided that:

in  $R^6$ , a second ring atom adjacent to said first ring atom is bound to a halogen, a primary carbon group, a secondary carbon group or a tertiary carbon group; and further provided that

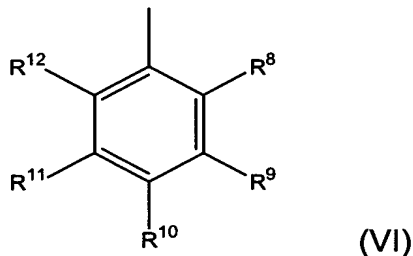
in  $R^6$ , when said second ring atom is bound to a halogen or a primary carbon group, none, one or two of the other ring atoms in  $R^6$  and  $R^7$  adjacent to said first ring atom are bound to a halogen or a primary carbon group, with

the remainder of the ring atoms adjacent to said first ring atom being bound to a hydrogen atom; or

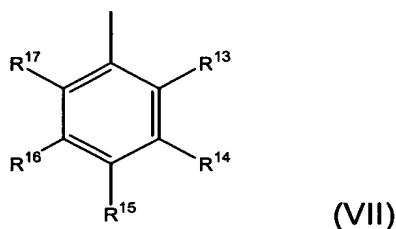
in  $R^6$ , when said second ring atom is bound to a secondary carbon group, none, one or two of the other ring atoms in  $R^6$  and  $R^7$  adjacent to said first ring atom are bound to a halogen, a primary carbon group or a secondary carbon group, with the remainder of the ring atoms adjacent to said first ring atom being bound to a hydrogen atom; or

in  $R^6$ , when said second ring atom is bound to a tertiary carbon group, none or one of the other ring atoms in  $R^6$  and  $R^7$  adjacent to said first ring atom are bound to a tertiary carbon group, with the remainder of the ring atoms adjacent to said first ring atom being bound to a hydrogen atom.

4. The process as recited in claim 3 wherein  $R^6$  is



and  $R^7$  is



wherein:

$R^8$  is a halogen, a primary carbon group, a secondary carbon group or a tertiary carbon group; and

$R^9$ ,  $R^{10}$ ,  $R^{11}$ ,  $R^{14}$ ,  $R^{15}$ ,  $R^{16}$  and  $R^{17}$  are each independently hydrogen, hydrocarbyl, substituted hydrocarbyl or a functional group; provided that:

when  $R^8$  is a halogen or primary carbon group none, one or two of  $R^{12}$ ,  $R^{13}$  and  $R^{17}$  are a halogen or a primary carbon group, with the remainder of  $R^{12}$ ,  $R^{13}$  and  $R^{17}$  being hydrogen; or

when R<sup>8</sup> is a secondary carbon group, none or one of R<sup>12</sup>, R<sup>13</sup> and R<sup>17</sup> is a halogen, a primary carbon group or a secondary carbon group, with the remainder of R<sup>12</sup>, R<sup>13</sup> and R<sup>17</sup> being hydrogen; or

when R<sup>8</sup> is a tertiary carbon group, none or one of R<sup>12</sup>, R<sup>13</sup> and R<sup>17</sup> is tertiary carbon group, with the remainder of R<sup>12</sup>, R<sup>13</sup> and R<sup>17</sup> being hydrogen; and further provided that any two of R<sup>8</sup>, R<sup>9</sup>, R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup>, R<sup>13</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup> and R<sup>17</sup> vicinal to one another, taken together may form a ring.

5. The process as recited in claim 5 wherein:

R<sup>1</sup>, R<sup>2</sup> and R<sup>3</sup> are hydrogen;

R<sup>4</sup> and R<sup>5</sup> are methyl;

R<sup>9</sup>, R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup> and R<sup>17</sup> are all hydrogen, R<sup>13</sup> is methyl, and R<sup>8</sup> is methyl; or

R<sup>9</sup>, R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup> and R<sup>17</sup> are all hydrogen, R<sup>13</sup> is ethyl, and R<sup>8</sup> is ethyl; or

R<sup>9</sup>, R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup> and R<sup>17</sup> are all hydrogen, R<sup>13</sup> is isopropyl, and R<sup>8</sup> is isopropyl; or

R<sup>9</sup>, R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup> and R<sup>17</sup> are all hydrogen, R<sup>13</sup> is n-propyl, and R<sup>8</sup> is n-propyl; or

R<sup>9</sup>, R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup> and R<sup>17</sup> are all hydrogen, R<sup>13</sup> is chloro, and R<sup>8</sup> is chloro; or

R<sup>9</sup>, R<sup>10</sup>, R<sup>11</sup>, R<sup>12</sup>, R<sup>14</sup>, R<sup>15</sup>, R<sup>16</sup> and R<sup>17</sup> are all hydrogen, R<sup>13</sup> is trifluoromethyl, and R<sup>8</sup> is trifluoromethyl.

6. The process as recited in claim 1 wherein one or more alkylating or hydriding agents are present.

7. The process as recited in claim 1 wherein one or more alkylaluminum compounds are also present.

8. The process as recited in claim 1 wherein said pKa is about 3 to about 18.

9. The process as recited in claim 1 wherein said organic compound is an alcohol, phenol, or carboxylic acid.

10. The process as recited in claim 3 wherein said organic compound is an alcohol, phenol, or carboxylic acid.

11. The process as recited in claim 7 wherein said organic compound is an alcohol, phenol, or carboxylic acid.

12. The process as recited in claim 9 wherein said organic compound is an alcohol.

13. The process as recited in claim 9 wherein said organic compound is a carboxylic acid.

14. The process as recited in claim 1 wherein said organic compound is monofunctional.

15. The process as recited in claim 1 wherein a stoichiometric excess of said organic compound is added.